Handbook of Agricultural Conservation Practices

Photos and Descriptions

Resource Conservation District of Monterey County

Handbook of Agricultural Conservation Practices
Photos and Descriptions

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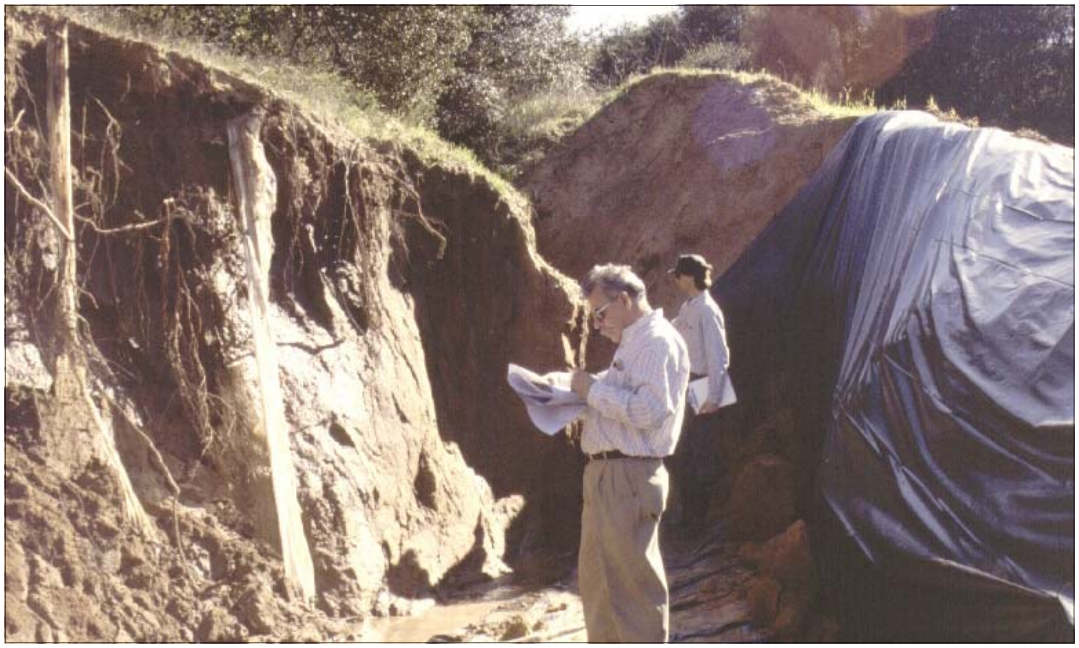
Introduction

Agriculture on the Central Coast is the foundation of this region's economy, with agricultural products totaling approximately $3 billion dollars annually and exports reaching over 50 countries world wide. Agriculture provides jobs for thousands of local residents. Numerous threats to agricultural resource sustainability exist including impaired water quality associated with nonpoint source pollution such as nutrient, sediment and pesticide loading.

The *Monterey Bay National Marine Sanctuary Action Plan IV: Agricultural and Rural Lands* is the product of collaboration between numerous landowners, growers and federal, state and local agencies to address water quality and resource sustainability concerns on the Central Coast. This handbook is a product of section two of this plan, which calls for the compilation and distribution of a Technical Tool-Kit of information. This handbook is a compilation of 16 commonly recommended conservation practices, however, is not an exhaustive list of conservation practices used to improve resource management.

The information presented in this handbook is meant as a first step to exploring resource conservation management options. It is not intended as a how to manual. Serious property damage, injury or death may result from installing an engineered practice without a design signed by an engineer. Details and assistance for implementing conservation practices are available at your local resource conservation agencies such as the Resource Conservation District of Monterey County and the USDA Natural Resource Conservation Service, both of which are non-regulatory agencies providing free services.

Grade Stabilization Structure



Gully head cut

Repaired landscape after grade stabilization structure installation

Definition: Grade stabilization structures are used to control the grade and head cutting in earthen channels.

Purpose: To safely convey water from the top of a headcut to a stable outlet for maximum grade stabilization structural integrity.

Criteria: The structure must be designed for stability. The outlet must be designed and built to prevent damage to the structure, or downstream areas.

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Row Arrangement

Determining row arrangement in the field

Tractor listing beds according to calculations

Finished furrows maximize production efficiency and sustainability

Description: Establishing a system of crop rows on planned grades and lengths primarily for erosion control and water management.

Purpose: To establish crop rows in direction, grade, and length that provide adequate drainage and erosion control and permit optimum use of rainfall and irrigation water.

Criteria: Facilitate the use of applicable field machinery. Provide for surface drainage, furrow irrigation, erosion control and water conservation. Conditions where practice applies: 1) on sloping land, where control of the length, grade, and direction of rows can reduce soil erosion; 2) to facilitate the optimum use of water in graded furrow irrigation systems; and, 3) on a surface drainage system where the rows are planned to carry excess water to surface drains.

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Stream Bank Protection

Debris scattered along eroding stream bank

Backhoe clearing bank of debris

Volunteer building willow mattress

Willow mattress used to protect bank from erosion

Description: Treatments used to stabilize and protect banks of streams or constructed channels, and shorelines of lakes, reservoirs, or estuaries.

Purpose: To prevent the loss of land or facilities adjacent to banks; to maintain the flow or storage capacity of the water body; to reduce the offsite or downstream effects of sediment resulting from bank erosion; to improve or enhance the stream corridor for fish and wildlife habitat, aesthetics and recreation.

Criteria: Measures must be installed according to a site-specific plan and in accordance with all applicable local, state, and federal laws and regulations. Protective measures must be used to minimize disturbance during construction.

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Tailwater Recovery System

Inlet collecting runoff, transporting it to storage reservoir

Pipe connecting series of storage reservoirs

Storage reservoir with transfer pump

Description: Facility to collect, store and transport irrigation tailwater for reuse in farm irrigation distribution system.

Purpose: Capture and store irrigation runoff for reuse as well as acting as a sediment and nutrient detention basin.

Criteria: Must predict irrigation runoff rate and sediment load to design sediment storage reservoir and determine pump capacity. Outlet must be designed and built to handle emergency overflow.

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Underground Outlet

Underground outlet pipe trench

Riser protruding from underground outlet which will collect surface water and transport it through underground outlet to energy dispersion area

Description: A pipe installed beneath the surface of the ground to collect surface water and convey it to a suitable outlet.

Purpose: To convey runoff water from steep slopes on developed parcels.

Criteria: Apply this practice where the slope is greater than 1% and concentrated runoff has enough volume to cause erosion and transport sediment.

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Vegetated Waterway

Eroding ditch

Shaped waterway prior to planting

Vegetated waterway

Definition: A constructed channel that is shaped or graded to the required dimensions and established in suitable vegetation for the stable conveyance of runoff.

Purpose: To convey runoff without causing erosion or flooding and to improve water quality.

Criteria: Amount of water conveyed will not exceed vegetated channel design with respect to erosion and flooding.

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Water & Sediment Control Basin

Offsite sediment transport and deposition

Sediment and water detention basin with riser & trash-rack

Piped outflow from sediment and water detention basin released into energy dispersing rock apron underlain with geotextile fabric

Definition: A basin or pond constructed to handle excess runoff and sediment from developed parcel.

Purpose: Detain water and retain sediment that is associated with runoff from developed parcel.

Criteria: Must be sized to accommodate the sediment load and excess runoff above natural predicted runoff. In addition, a primary spillway and an emergency spillway must be installed to prevent basin failure.

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Cover Crop

Legume mixture

Established Cover Crop

Definition: Grown in row crop systems and vineyards where seasonal benefits of a cover crop are needed. They control erosion, add organic matter and nutrients to the soil, improve soil tilth and increase infiltration and aeration of the soil. Cover crops have a filtering effect on movement of sediment, pathogens, and pollutants attached to sediment.

Purpose: Control erosion when the major crops do not furnish adequate cover. Add organic material to the soil and improve infiltration, aeration, and tilth.

Criteria: Includes temporary cover crops as well as long term, perennial or reseeding annual cover crops. Selected species must be compatible with the planned management system.

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Critical Area Planting

Seeded jute-netting covering bare soil to reduce erosion and promote germination

Jute-netting with willow stakes to stabilize eroding bank

Definition: Planting vegetation, such as grasses, shrubs and trees, on highly erodible slopes.

Purpose: To stabilize the soil, reduce damage from sediment and runoff to downstream areas, and improve wildlife habitat and visual resources.

Criteria: Use on erodible or critically eroding areas that if left untreated can cause severe erosion or sediment damage. Seeding recommendations can be obtained from your local RCD or NRCS office. Adjust seeding rates to ensure the required amount of pure live seed. Use straw mulch on plantings to anchor seeds in place during germination.

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Filter Strip

Filter strip separating crops from wetland area

Filter strip buffering river from crop land

Description: A strip or area of vegetation for removing sediment, organic matter, and other pollutants.

Purpose: To remove sediment and other pollutants from runoff by processes such as filtration, deposition, infiltration, absorption, and volatilization, thereby reducing pollution and protecting the environment.

Criteria: Apply this practice on cropland at lower edge of field, in areas requiring filter strips as part of a system to treat polluted runoff. Appropriate filter strip size is related to the type of pollutants being filtered, the filter strip slope and the drainage area being treated.

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Hedgerow

Roadside Hedgerow

Hedgerow stabilizing bank

Definition: Establishing a living fence of shrubs or trees in, across, or around a field.

Purpose: To delineate field boundaries, attract beneficial insects, serve as fences, establish contour guidelines, provide wildlife food and cover, provide screens, or improve landscape.

Criteria: Species selection should be given careful consideration to minimize possible conflict between plantings and crops to be grown. Use local or known plant sources whenever possible. Consideration should be given to flowering and otherwise attractive species as well as those providing choice wildlife food and cover. Consult your local RCD or NRCS office for plant species recommendations.

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Irrigation Water Management

Catch cans set up to test irrigation distribution uniformity

Measuring flows to maintain manufacturer recommended pressure

Definition: Irrigation Water Management is the process of determining and controlling the volume, frequency, and application rate of irrigation water in a planned, efficient manner.

Purpose: Manage soil moisture to promote desired crop response, optimize use of available water, minimize irrigation induced soil erosion, decrease nonpoint source pollution of surface and groundwater resources, manage salts in the crop root zone and manage the air, soil or plant microclimate.

Criteria: Address proper irrigation scheduling, in both timing and amount, the control of runoff, and the uniform application of water.

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Nutrient Management

Field demonstration of Pre-Sidedress Soil Nitrate Quick Test

Water quality sampling of nearby creek to determine nutrient levels

Definition: Managing the amount, form, placement and timing of nutrient applications.

Purpose: To supply plant nutrients for optimum forage and crop yields, minimize entry of nutrients to surface and groundwater, and to maintain or improve chemical and biological condition of soil.

Criteria: Develop a crop nitrogen use budget for each crop in the proposed cropping sequence. Utilize tools such as the Pre-Sideress Soil Nitrate Quick Test to maintain consistency with the predetermined budget.

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Road Seeding

Unseeded Road Eroding

Seeded Road

Definition: Roads are one of the most vulnerable areas on the farm to erosion. By seeding your road throughout the winter months, your roads can be protected.

Purpose: To stabilize soil, reduce damage from sediment and runoff to downstream areas, and improve wildlife habitat and visual resources.

Criteria: Seeding recommendations can be obtained from your local RCD or NRCS office. Adjust seeding rates at the field site to insure the required amount of pure live seed. Use straw mulch on plantings to anchor seeds in place during germination. Irrigate seed to establish grass before winter rains.

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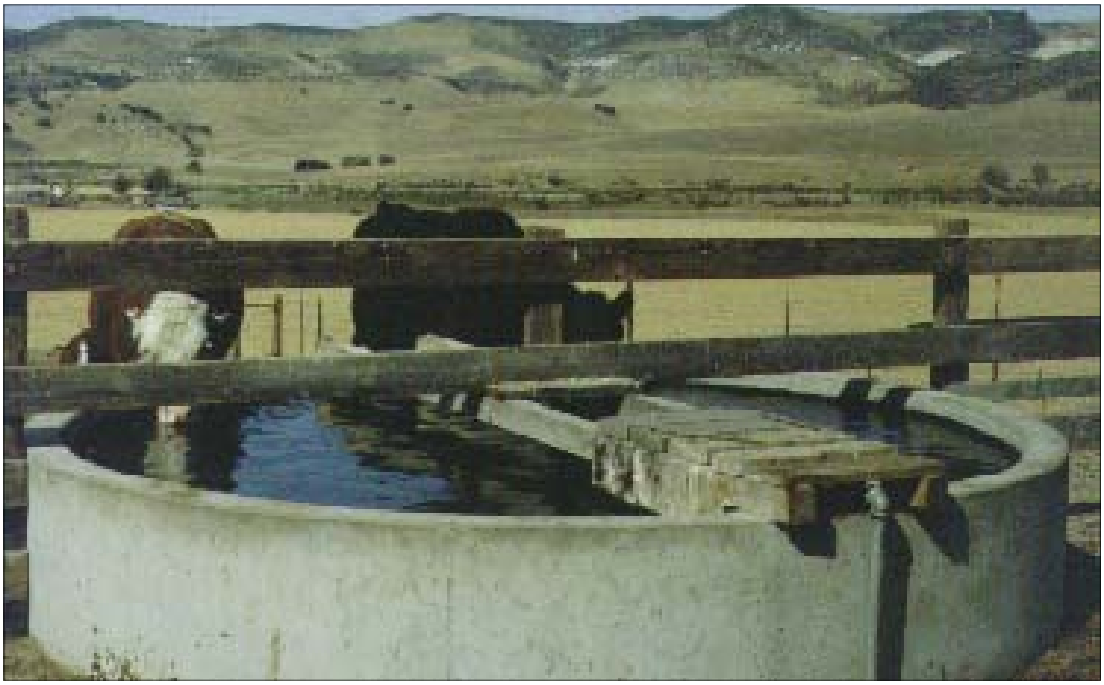
Cattle Trough



Cattle Trough

Cattle trough on concrete apron

Definition: A trough or tank, with needed devices for water control and wastewater disposal, installed to provide drinking water for livestock

Purpose: To provide watering facilities for livestock at selected locations that will protect vegetative cover, streams and wetlands

Criteria: Adequate capacity to meet the water requirements of the livestock. Include the storage volume necessary to carry over between periods of replenishments.

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Fence

Fence separating livestock area from riparian area

Cattle fence

Definition: A constructed barrier to livestock or wildlife.

Purpose: Applied as part of a conservation management system to facilitate the application of conservation practices that treat soil or water concerns.

Criteria: Fences shall be positioned to facilitate management requirements. Height, size, spacing and type of fence will be used that best suit the topography of the landscape.

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Technical Assistance Contacts

Monterey County:	
Resource Conservation District of Monterey County	831-424-1036 x124
USDA Natural Resources Conservation Service	831-424-1036 x101
University of California Cooperative Extension	831-759-7350
Community Alliance with Family Farmers	831-722-5556
Central Coast Vineyards Team	831-434-4848
Monterey County Farm Bureau	831-751-3100
Monterey County Agricultural Commissioner	831-759-7325
Monterey County Water Resources Agency	831-755-4963
Santa Cruz County:	
Santa Cruz County Resource Conservation District	831-464-2950
USDA Natural Resources Conservation Service	831-475-1967
University of California Cooperative Extension	831-763-8040
Santa Cruz County Farm Bureau	831-724-1356
Santa Cruz County Agricultural Commissioner	831-763-8080
San Mateo County:	
San Mateo Resource Conservation District	650-712-7765
USDA Natural Resources Conservation Service	831-475-1976
University of California Cooperative Extension	650-726-9059
San Mateo County Farm Bureau	650-726-4485
San Mateo County Agricultural Commissioner	650-363-4700
San Luis Obispo:	
Upper Salinas-Las Tablas Resource Conservation District	805-434-0396 x112
USDA Natural Resources Conservation Service	805-434-0396 x102
University of California Cooperative Extension	805-781-5940
San Luis Obispo County Farm Bureau	805-543-3654
San Luis Obispo Agricultural Commissioner	805-781-5910
San Benito County:	
San Benito County Resource Conservation District	831-772-4398
USDA Natural Resources Conservation Service	831-637-4360
University of California Cooperative Extension	831-637-7643
San Benito County Farm Bureau	831-637-7643
San Benito County Agricultural Commissioner	831-637-5344
Santa Clara County:	
Loma Prieta Resource Conservation District	408-847-4171
USDA Natural Resources Conservation Service	831-637-4360
University of California Cooperative Extension	408-299-2635
Santa Clara County Farm Bureau	408-776-1684
Santa Clara County Agricultural Commissioner	408-918-4600

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